

Ryan Chouest Data Summary Deepwater Horizon Oil Spill Cruise 6/27/2010

Review Date 6/28/2010

Summary:

This sampling report presents data collected from the Ryan Chouest for the period of 6/27/2010. The Ryan Chouest sailed on the cruise track shown in Figure 1. This cruise track deviated from that originally planned, taking a more Southerly route in order to visit the previous R/V Weatherbird CTD site (29° 02 N, 88° W) and while in the area, they took the opportunity to operate the hydrocarbon sensor array sensor system while circling the Deepwater Horizon incident site spill site. We are now back on our planned east west transect.

Science results and preliminary interpretation:

All three fluorometry sensors show consistent results over the cruise track shown in Figures 2 – 4. Sensor readings are low and near baseline values on the region of the track outside of the potential oiling fingerprint and increase to their highest values northwest of the Deepwater Horizon incident site. Although it appears that the values are not significantly higher around the incident site compared to regions to the northeast, it is due to scaling problems on the maps. The color scaling on the maps is insufficiently granular to be able to see the detail between ~230 and ~400ppb of TPHg (the approximate difference between the values encountered in the northeast quadrant and the results obtained at the spill site). Future mapping of the sensor response data will use a smaller range of concentration in order to display sensor response granularity. The sensor responses from close to the incident represent the highest values thus far on the Ryan Chouest scientific expedition. Although the fluorometers detected their highest values close to the spill site, they did not detect TPHg concentration at levels exceeding 0.5ppm based on the previous sensor calibration using SPE extraction followed by GCMS analysis.

Sea surface oil slick observations include convergence lines with dense patches of seaweed and surface sheens (Photographs 1). The surface sheens observed included light and rainbow sheens, which were subtle and could be discerned only with careful examination of calm water (Photograph 2). They also observed streamers of orange mousse with dense patches of mousse (Photographs 3 – 5). Results from the casts and water sample analysis will be presented in the final Cruise 5 report.

Planned versus actual route taken for Cruise 5:

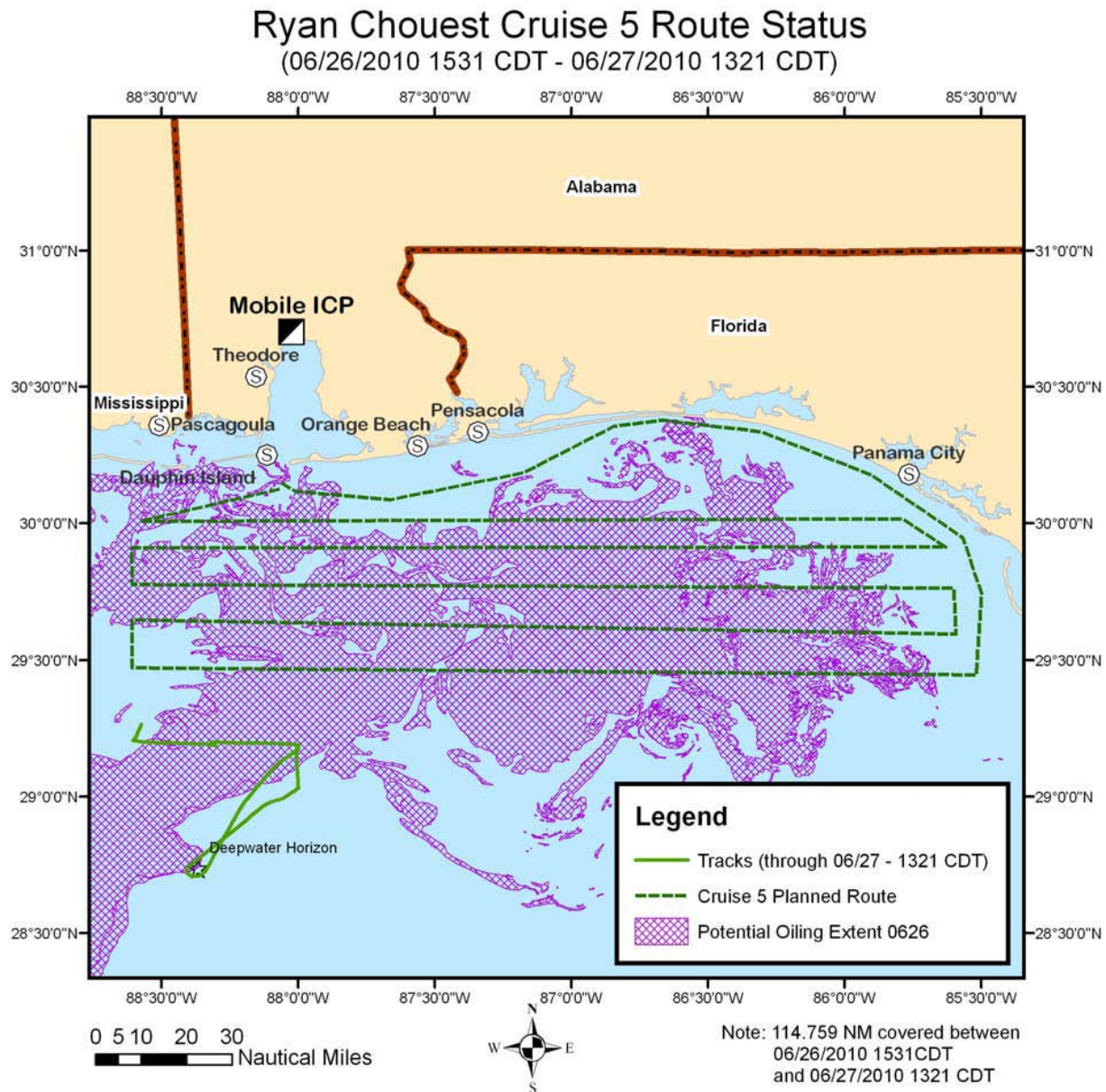


Figure 1: Planned versus actual route course plotted between 06/26/2010 –06/27/2010. Purple shaded area represents outline extent of the slick from 06/26 ERMA composite.

Vessel Science Operations:

Fluorometer measurements were logged and observations of sea-surface conditions were made throughout the majority of the period. The vertical cast system was operated to maximum depth of 120 meters at three cast sites. In addition, water samples were taken at 5 mile spacing between the R/V Weatherbird site and the incident site. Other water and surface samples have been taken during the 24 hour period when features of interest were encountered. They continue to perform liquid-liquid extractions on seawater samples/mousses and analyze the extracted material by GCMS.

Ryan Chouest Cruise 5 Data
Chelsea - Fluorometer
(06/26/2010 1531 CDT - 06/27/2010 1321 CDT)

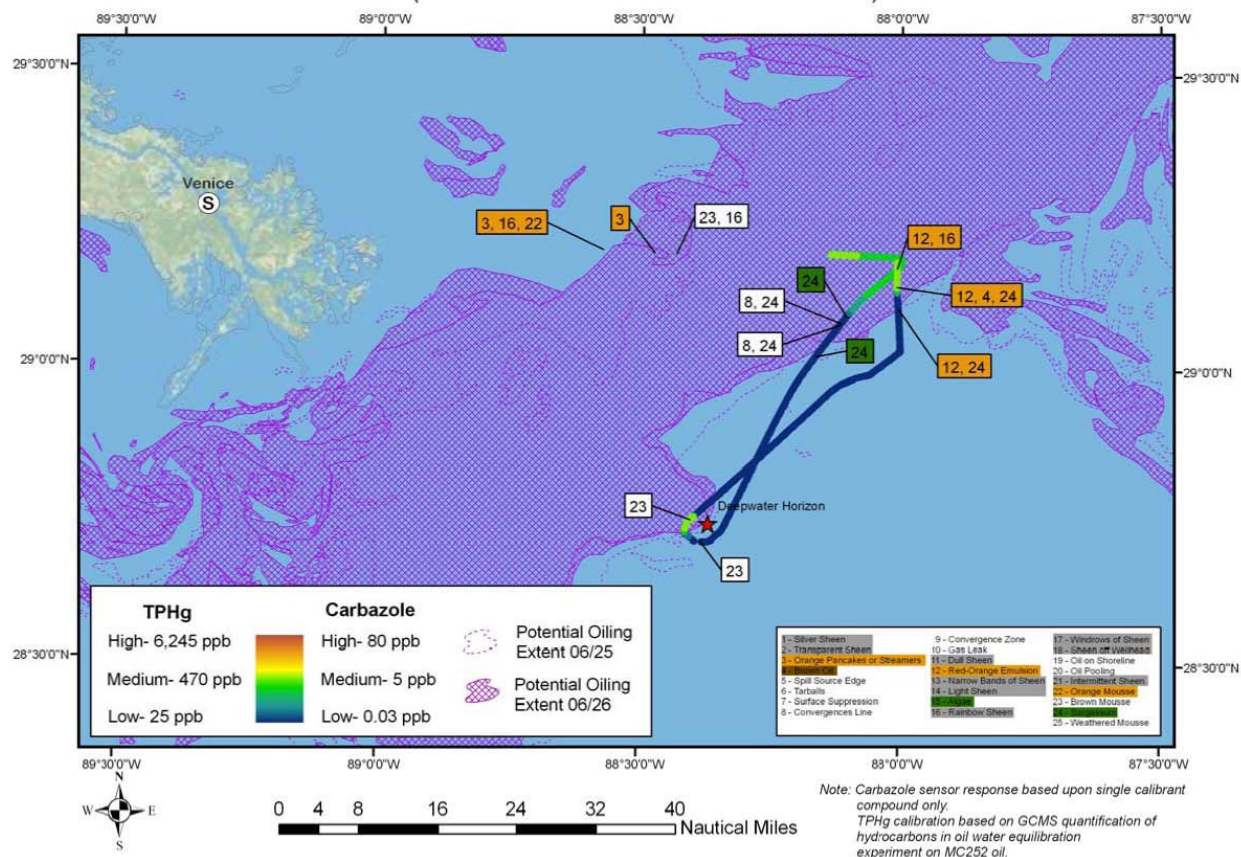


Figure 2: Chelsea fluorometer results plotted with location on cruise 5 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Ryan Chouest Cruise 5 Data Trios - Fluorometer (06/26/2010 1531 CDT - 06/27/2010 1321 CDT)

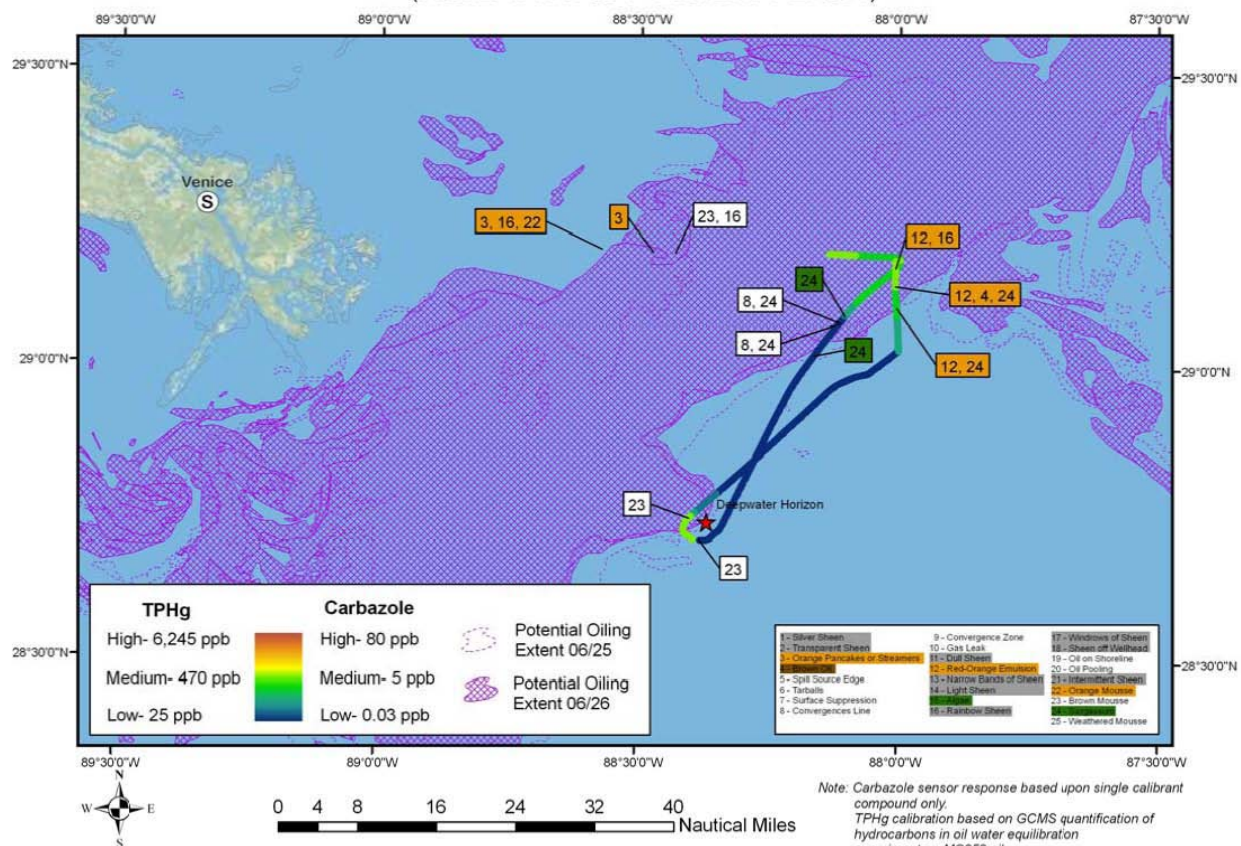


Figure 3: Trios fluorometer results plotted with location on cruise 5 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

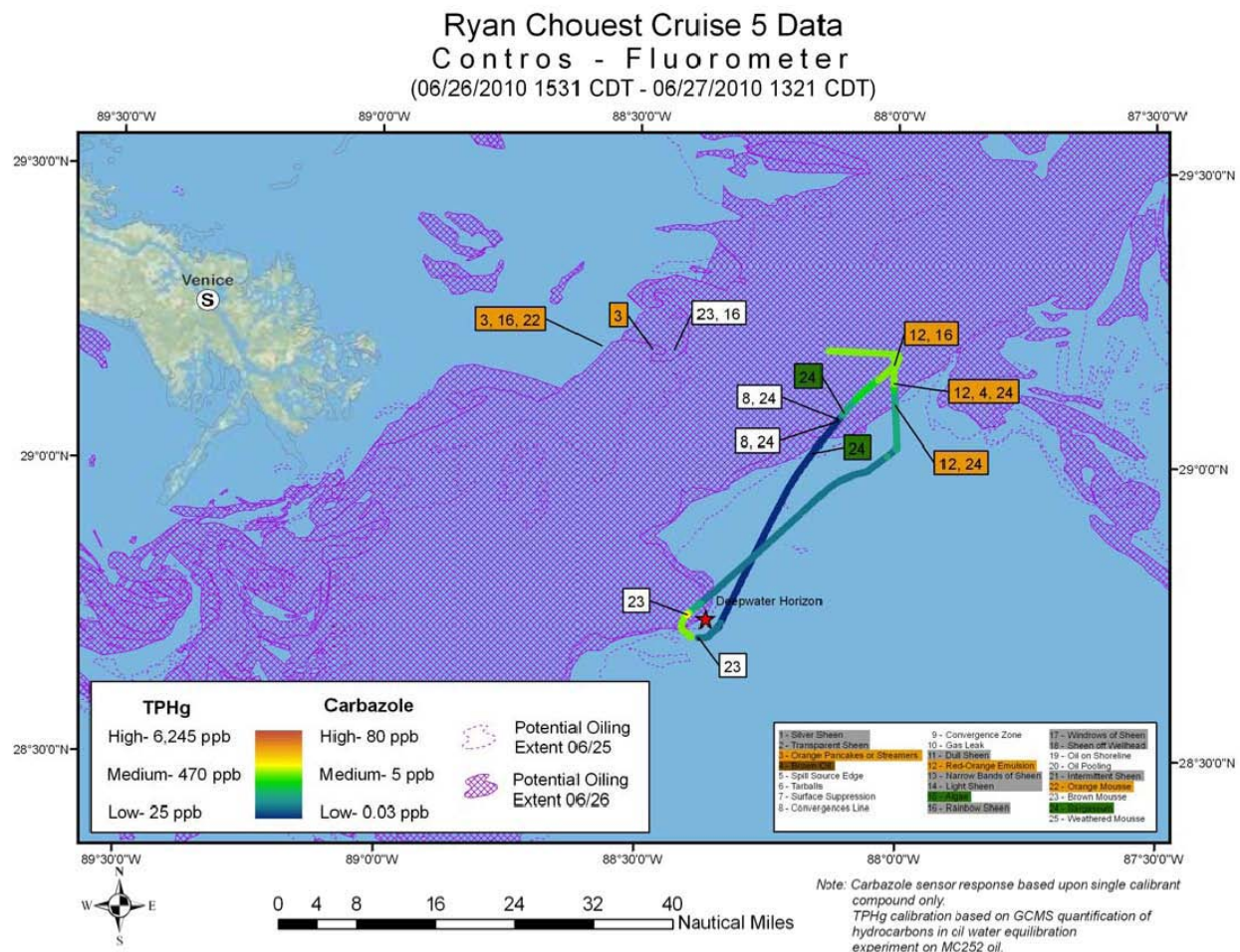


Figure 4: Contros fluorometer results plotted with location on cruise 5 track. Breaks in data occur when either data quality is poor or the systems were turned off due to pump problems.

Problems/Operational Issues:

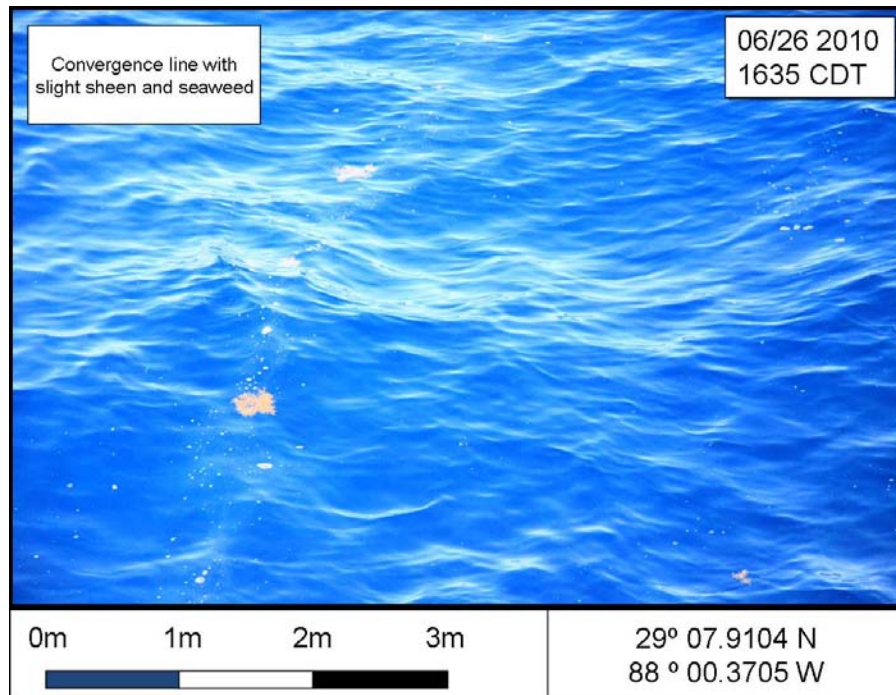
During vertical water sampling, the hose and electrical lines slipped out of the new wheel block and became wedged between the wheel and the metal block. This occurred several times and was caused by strong currents pulling the hose away from the ship. The Captain tried to keep the vessel correctly oriented using dynamic positioning, but the currents were too strong. We also had a submersible pump for the underway sensor fail this morning, which is why we do not have full data coverage across the slick as shown in Figures 2 – 4. This pump was exchanged for the pump used for the casts in order to continue to collect surface track data. The operational problems have caused a significant delay to our cruise and as such in order to keep to a scheduled arrival at Theodore at 6 am on Wednesday, June 30th. They will modify the planned route eliminating one of the East-West return transsects.

Planned activities for next 24 hours:

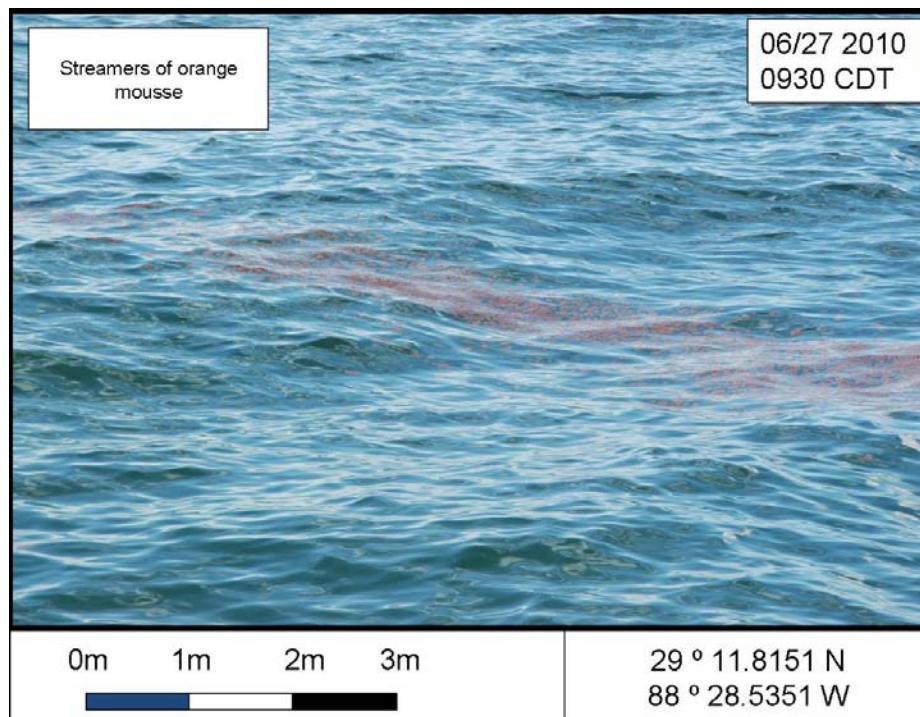
The Ryan Chouest is sailing the planned cruise track. They will not deploy any further vertical casts on cruise 5.

Photographs

The following photographs were included in the Ryan Chouest's daily report:



Photograph 1. Convergence line characterized by seaweed and slight surface sheen.



Photograph 2. Streamers of dense orange mousse.